Claims

What is claimed is:

1. A method for compensating a fluid sensor using a heater and a temperature sensor, wherein each of said heater and said temperature sensor are in thermal communication with the fluid of interest and have a resistance that changes with temperature, the method comprising the steps of:

determining the variability range of H_2O in the fluid to be sensed;

selecting a desired temperature for said heater; and

energizing the heater with an input signal to induce an elevated temperature condition in said heater.

2. The method of claim 1 further comprising the steps of:

determining the variability range of CO_2 in the fluid to be sensed.

3. The method of claim 1 wherein the step of selecting a desired temperature for said heater further comprises the steps of:

measuring the thermal conductivity of the fluid to be sensed over a range of temperatures; and

selecting the desired temperature based on the thermal conductivity measurements to minimize the effect of H_2O.

4. The method of claim 1 wherein the step of selecting a desired temperature for said heater further comprises the steps of:

measuring the thermal conductivity of the fluid to be sensed over a range of temperatures; and

selecting the desired temperature based on the thermal conductivity measurements to minimize the combined effects of H_2O and CO_2.

5. A fluid sensor for determining a selected property of one or more fluids of interest, comprising:

a heater;

a thermal sensor in proximate position to said heater and in thermal communication therewith through the one or more fluids of interest, said sensor having a temperature dependent output; and

energizing means connected to said heater for energizing the heater to induce an elevated temperature condition in said thermal sensor, wherein said elevated temperature is preselected to minimize the effect of H_2O.

6. The fluid sensor of claim 5 wherein said elevated temperature is also preselected to minimize the effect of CO_2.

7. The fluid sensor of claim 5 wherein said fluid sensor is used to sense hydrogen concentration in the one or more fluids of interest.

8. The fluid sensor of claim 5 wherein the one or more fluids are gases.

9. A method for compensating a fluid sensor using a heater and a temperature sensor, comprising:

adjusting the output of the fluid sensor to a known value for ambient temperature;

determining the range of H_2O in the fluid to be sensed;

selecting a heater temperature value to minimize the effect of H_2O on the fluid sensor; and

heating the fluid to be sensed using the heater to the selected temperature value.

10. The method of claim 9 further comprising the steps of:

determining the range of CO_2 in the fluid to be sensed; and

selecting the heater temperature value to minimize the effect of CO_2 on the fluid sensor.

11. The method of claim 9 wherein the selected temperature is chosen to minimize any non-linear sensor resistance values for the range of H_2O concentration.

12. The method of claim 9 wherein the selected temperature is chosen to minimize any non-linear sensor resistance values for the range of CO_2 concentration.

13. A method for compensating a fluid sensor using a heater and a temperature sensor, wherein each of said heater and said temperature sensor are in thermal communication with the fluid of interest and have a resistance that changes with temperature, the method comprising the steps of:

determining the variability range of CO_2 in the fluid to be sensed;

selecting a desired temperature for said heater; and

energizing the heater with an input signal to induce an elevated temperature condition in said heater.

14. The method of claim 13 wherein the step of selecting a desired temperature for said heater further comprises the steps of:

measuring the thermal conductivity of the fluid to be sensed over a range of temperatures; and

selecting the desired temperature based on the thermal conductivity measurements to minimize the effect of CO_2.

15. A fluid sensor to sense hydrogen concentrations comprised of:

a thin film heater;

at least one thin film temperature sensor;

a semiconductor body with a depression therein; and

the heater and temperature sensor lying in a plane substantially parallel to the semiconductor body, said heater operable to induce a predetermined temperature proximate to the heater and the temperature sensor inside the fluid sensor, said temperature being preselected to minimize the effect of a fluid from the group consisting of H_2O and CO_2.

16. The fluid sensor to sense hydrogen concentrations of claim 15 wherein said fluid sensor is operable to monitor hydrogen in a proton exchange membrane fuel cell.

17. The fluid sensor to sense hydrogen concentrations of claim 15 wherein said fluid sensor is operable to monitor the fluid mixture composition of one or more refrigerants.

18. The method of claim 1 wherein the desired temperature for said heater may be configured in the field.

19. The method of claim 13 wherein the desired temperature for said heater may be configured in the field.

20. The method of claim 1 wherein the elevated temperature condition in said heater is the desired temperature.

21. The method of claim 13 wherein the elevated temperature condition in said heater is the desired temperature.

22. A method for compensating a fluid sensor using a heater and a temperature sensor, comprising:

adjusting the output of the fluid sensor to a known value for ambient temperature;

determining the range of H_2O and CO_2 in the fluid to be sensed;

energizing the heater in the fluid to be sensed to one or more temperatures and

varying the amount of H_2O and CO_2 in the fluid to be sensed while monitoring the output of the fluid sensor;

selecting a heater temperature value to minimize the effect of H_2O and CO_2 on the fluid sensor;

heating the fluid to be sensed using the heater to the selected temperature value.

23. The fluid sensor of claim 8 wherein its output is used to control the concentration of individual components resulting from mixing at least two fluids.

24. The fluid sensor of claim 5 wherein the one or more fluids of interest are gases.

25. The fluid sensor of claim 5 wherein the one or more fluids of interest are liquids.

26. The fluid sensor of claim 5 wherein the one or more fluids of interest are refrigerants.